

**February 21, 2001**

**UNDER SECRETARY FOR HEALTH'S INFORMATION LETTER**

**HEMODIALYSIS ACCESS VIA AV-FISTULA**

1. The literature supports the use of autogenous arterio-venous (AV) fistula for hemodialysis as compared to prosthetic graft. Autogenous AV fistula is associated with lower morbidity and longer survival. Various studies have demonstrated that the 2-year patency rate of a *e*-Polytetrafluoroethylene (*e*-PTFE) graft is only 30 to 40 percent, and these grafts have a useful life one-third to one-tenth that of autogenous AV fistula. In addition, a large proportion of hospitalization costs encountered in patients with end-stage renal disease (ESRD) has been associated with complications of hemodialysis access. Since autogenous AV accesses have a much lower complication rate, the Veterans Health Administration should move towards at least 50 percent autogenous AV fistulas in patients requiring hemodialysis as supported by the Dialysis Outcomes Quality Initiative (DOQI) guidelines. Therefore, a meeting of vascular surgeons was held in Washington, DC, (see Att. B) to formulate the following recommendations in dealing with hemodialysis accesses:

a. **Access.** Autogenous AV access is the preferred form of AV access for hemodialysis. Ideally, placement of an autogenous AV access should occur about 12 weeks (at a creatinine clearance of 25ml/min for diabetics and 15ml/min for non-diabetics) in advance of the need for renal replacement therapy. It is recommended that under no circumstances autogenous access be used before 8-12 weeks. Even then, the treating physician should clear it for use after inspecting the access. The prosthetic access should not be used for 4 weeks; however, 2 weeks may be adequate if the treating physician inspects the graft and deems it ready for use. Within 3-7 days of the operation, the access site needs to be assessed to ensure the absence of any immediate complication. A surgeon needs to conduct a follow-up assessment within 14-28 days to sign-off the patient or verify that the site is ready for use.

**(1) Anatomical options:**

(a) Autogenous.

(b) Non-dominant upper extremity preferred over dominant (upper extremity).

(c) Upper extremity location starting distally and working proximally:

1. Snuff box fistula.

2. Forearm radio cephalic AV-fistula.
3. Forearm vein transposition.
4. Forearm graft may be considered.
5. Upper arm brachiocephalic AV-fistula.
6. Upper arm basilic vein transposition.
7. Upper arm graft may be considered.

(d) At the end of AV access placement surgery, there must be a palpable thrill or audible bruit over the arterial anastomosis, and basic evaluation for pulses in the wrist should be carried out.

**(2) Evaluation of Upper Extremity for autogenous AV access options:**

**(a) Arterial:**

1. Blood pressure in both arms.
2. Pulse exam.
3. Continuous wave Doppler exam with palmar arch signal.

**(b) Venous:**

1. Careful history of central venous access.
  2. Upper extremity symptoms or previous fractures.
  3. Exam should include application of tourniquet to upper extremity to evaluate superficial veins.
  4. Tap test to outline course and continuity of suitable veins.
  5. Evaluate collaterals and skip segments of veins suggesting problems.
  6. Previous venous punctures
- (c) Refer to Vascular Laboratory for evaluation for the following:
1. Central venous catheters with symptoms of concern.
  2. Abnormal findings of the upper extremities or patients with multiple catheters.

3. Access failures without technical reasons.

4. Patients who only had one catheter with normal venous examination may be deferred from Vascular Laboratory examination depending on judgement of the surgeon.

b. **Stenosis**

(1) If there is a problem with stenosis, imaging study and dilatation of the stenosis and/or an operative repair needs to be performed.

(2) If there is no identifiable technical problem in the graft or anastomosis of the thrombosed access then it is suggested that a work-up for hypercoagulable state and/or proximal venous and arterial system be carried out.

c. **Pseudoaneurysm**

(1) If there is presence of complication or potential for complication (such as thinning of skin over the pseudoaneurysm), then repair is indicated.

(2) Preventive Suggestion: Puncture the fistula at different sites along its course to prevent localized weakness of the wall.

d. **Infections**. Early cellulitis can be treated with antibiotics.

(1) Localized infection. If the infected part of the graft is isolated to a localized area of the body of the graft without involvement of an anastomosis, then try to replace only that part of the graft by bypassing it.

(2) Generalized infection. If the whole graft is infected including one or both anastomoses and/or the patient is systemically ill or septic, the entire graft needs to be removed and a central access placed. Once the infection is cleared, a new access is then created.

e. **Steal Syndrome**. Evaluate the proximal arterial inflow for presence of significant stenosis. If none is found, then procedures aimed at decreasing the amount of blood flow through the access need to be considered.

f. **Indications For Temporary Dialysis Access**

(1) Non-tunneled Temporary Catheters. Non-tunneled catheters will be used strictly for emergencies when dialysis is required right away and there is no time for interventional radiology or surgery. The site may be internal jugular, subclavian, or femoral as determined by the vascular surgeon. However, the subclavian site should be avoided to prevent proximal venous stenosis or occlusion precluding future placement of AV access in the affected limb. These catheters should be avoided as much as possible.

(2) Tunneled Catheters. Tunneled catheters can be used as a “bridge” until a permanent AV access is placed. Under no circumstances should tunneled catheters be considered a permanent

AV access for dialysis except in patients with very short expected survival or those with tendency towards infections. **NOTE:** *Tunneled catheters with implantable dialysis ports may need to be considered.*

(3) Optimally, no more than 10 percent of patients in a VA Dialysis Unit should have dialysis delivered via a tunneled catheter (not to include patients with limited life span or with infection). Permanent access is desired as soon as possible. Patients with these catheters need to be evaluated frequently for creation of a permanent AV access.

(4) Fifty percent of patients that present with thrombosed, but salvageable AV access, need to be declotted on an urgent basis. Autogenous AV accesses need to be declotted as soon as possible, preferably within 24 hours. Thrombosed non-autogenous AV accesses need to be declotted as soon as possible or at least within 3 days of presentation. Central lines need to be avoided whenever possible.

g. **Standardized Record-Keeping**

(1) At each medical center a standard template needs to be developed containing universally collected information to assist in the early identification of problems that may indicate deteriorating or failing accesses.

(2) At each dialysis visit the minimum recorded data needs to include:

1. History,
2. Physical exam,
3. Appearance of access site,
4. Character of pulse,
5. Static and dynamic venous pressures,
6. Standardized rates,
7. Flow rates,
8. Arterial pressure or venous pressure, and
9. Any special concerns that may be a predictor of a possible problem, such as excessive bleeding and/or declining blood flow rate, even if adequate on that day.

(3) If any of the preceding is of concern in three consecutive visits, it needs to be considered a “red flag,” and the patient is to be referred immediately to vascular surgery staff or the vascular surgical coordinator for further evaluation. **NOTE:** *The coordinator needs to be a specific individual, preferably a dialysis nurse that will be responsible for follow-up and evaluation of problems with access.*

(4) Inpatients with a possible proximal venous problem, need to have a venogram performed in consultation with vascular surgery staff and reviewed with interventional radiologists. **NOTE:** *If the facility has the capability to conduct a Duplex scan, this study needs to be performed for non-invasive diagnostic purposes.* Vascular surgery staff, in conjunction with radiology staff, need to discuss options and make a decision.

(5) If a patient is referred for vascular surgery, then a vascular surgeon needs to conduct a minimum of one follow-up visit. After the creation of AV fistula or revision by a vascular surgeon or interventional radiologist, a minimum of one follow-up visit needs to be made with the vascular surgeon.

h. **Hemodialysis Access Coordinator and Clinic**

(1) Coordinators are essential to the success of the dialysis program. The coordinator would be responsible for multi-disciplinary care. The continuity of this care is essential since other disciplines and staff rotations must be considered. A permanent coordinator is preferred; otherwise, a member of the current staff is assigned to perform these tasks. This person would also be charged with maintaining a registry of patients and data that can be entered into a computer for analysis at a later date.

(2) A dedicated dialysis access clinic needs to be established (based on the volume of the patients with chronic renal failure or hemodialysis) that includes interdisciplinary staff, a vascular surgeon, access coordinator, interventional radiologist, if available, and a nephrologist. This will facilitate timely referral to vascular surgery and placement of an AV fistula or an AV graft for adequate dialysis access. A dedicated clinic could provide such information as history on the patient, date of access creation, type of access, pictures and other pertinent information prior to placement of an AV access.

2. Attachment A contains pertinent references.

3. Questions regarding this information letter may be referred to T. G. Patel, M.D., Acute Care Strategic Healthcare Group, Veterans Health Administration at 202-273-8530.

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Attachments

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**ATTACHMENT A**

**REFERENCES**

1. National Kidney Foundation. "Dialysis Outcomes Quality Initiative: Clinical Practice Guidelines for Vascular Access," New York; National Kidney Foundation, 1997.
2. Feldman, HI, Held, PJ, Hutchinson, JT, et al. "Hemodialysis Vascular Access Morbidity in the United States," Kidney International (Kidney Int.) 43;1091-1096:1993.
3. Hakim, R, Himmelfarb, J. "Hemodialysis Access Failure; a Call to Action," Kidney Int. 54:1029-1040:1998.
4. Veterans Health Administration Clinical Practice Guidelines for the Management of Chronic Renal Disease and Pre-ESRD in the Primary Care Setting.



**ATTACHMENT B**

**VASCULAR MEETING ATTENDEES AND CONSULTANTS  
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